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A Study on clinical and pathological aspects of Parotid Gland Tumours

Dissertation submitted for
M.S. Degree (General Surgery)
March - 2009

DEPARTMENT OF SURGERY,
MADURAI MEDICAL COLLEGE AND
GOVERNMENT RAJAJI HOSPITAL,
MADURAI.

CERTIFICATE

This is to certify that the dissertation entitled "**A STUDY ON CLINICAL AND PATHOLOGICAL ASPECTS OF PAROTID GLAND TUMOURS** is a bonafide record of work done by Dr.**R.RENGANATHAN.,** in the Department of Surgery, Government Rajaji Hospital, Madurai Medical College, Madurai., under the direct guidance of me.

Professor of Surgery
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Department of surgery,
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DECLARATION

I**, Dr.R.Renganathan,** solemnly declare that the dissertation titled "**A study on clinical and pathological aspects of Parotid Gland Tumours"** has been prepared by me.

This is submitted to **The Tamil Nadu Dr. M.G.R. Medical University, Chennai,** in partial fulfillment of the rules and regulations for the award of MS degree General Surgery.

Place: Madurai **Dr.R.Renganathan.**

Date :

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CONTENTS

INTRODUCTION

Tumours of the salivary glands form a fascinating subject for the head and neck surgeons. The relative infrequency combined with considerable histologic and Behavioural diversity and their regional anatomic relationship make them unusually interesting and challenging. The parotid tumours are more so because of their intimate relationship to the facial nerve, the presence of intra and paraparotid lymph nodes, and presence of a lobe.

Salivary gland tumours comprise less than 3 % of all neoplasms of head and neck and no more than 1 % of all neoplasms. Approximately 80-85% of all salivary gland neoplasm occurs in the parotid gland. Although 80% of these are benign, earlier reports indicated a high recurrence rate after limited resection. This has led to a more aggressive approach to the treatment of these lesions in the recent years in the form of either subtotal or total conservative parotidectomy with excellent results.

The successful treatment of these tumours involves understanding of diagnosis, surgical anatomy, histopathology, biological behaviour and appropriate uses of the various techniques and modalities of therapy.

The peculiar features of salivary gland tumours make it difficult for a single surgeon or institution to do meaningful prospective studies. In addition long term follow up is critical for many tumour types, but is lacking in most recent reports. Thus, much of our knowledge is based on retrospective studies, small series and short follow up.

REVIEW OF ANATOMY AND PATHOPHYSIOLOGY

DEVELOPMENT OF PAROTID

The parotid gland arises from the epithelial of the mouth. The frequent finding of sebaceous glands in the parotid suggests an ectodermal origin. Parotid glands are the first salivary glands to appear. When the embryo is about 4-6 weeks of development, parotid appears as an epithelial ingrowth near the angle of the mouth on inner surface of either cheeks. As it grows backwards, towards the ramus of the mandible, it becomes a hollowed tube at this level, branches intensively into the primodial ducts and acinar cells. The tube persists as the parotid duct. Condensation of the mesenchyme surrounding the developing parotid gland occurs, later in embryonic life. So lymphnodes may become entrapped in the gland. The origin of myoephithelial cells is unknown.

SURGICAL ANATOMY

The parotid is the largest salivary situated immediately inferior and anterior to the lower part of the ear. The gland is purely serous in nature. It forms an irregular, lobulated yellowish mass, lying below the external acoustic meatus, between the mandible and the sternomastoid muscle. It projects forward on the surface of the masseter, where a small part of it,

usually more or less detached, lies between the zygomatic arch above and the parotid duct below. This is named the accessory parotid.

The investing layer of deep cervical fascia splits between the angle of the mandible and mastoid to enclose the parotid gland.

The parotid gland is like an inverted, flattened, three sided pyramid. The surfaces are a small superior surface, super antromedial and posteromedial surface. The lower part of the gland tapers to form a blunt apex. The superior surface is concave and is related to the external acoustic meatus and to the posterior surface of temporomandibular joint. Superficial temporal vessels and auriculotemporal nerve emerge out from the gland at this surface.

The superficial surface is covered with skin, superficial fascia, parotid fascia which is thick and adherent to the gland and a few deep parotid lymph nodes embedded in the gland.

The anteromedial surface is grooved by the posterior border of the ramus of the mandible. It covers the lateral aspect of the temporomandibular joint. The branches of the facial nerve emerge on the face from under cover of the anterior margin of this surface.

The posteromedial surface is moulded to the mastoid and the styloid process. Thus it is related to the sternomastoid, posterior belly of digastric, stylohyoid muscle and ligament, stylopharyngeus and the stylomandibular ligament. The external carotid artery grooves this surface before it enters the gland. The anteromedial and the posteromedial surfaces meet along a medial margin which may be in contact with the side wall of the pharynx.

The apex of the gland extends into the carotid triangle. The cervical branch of the facial nerve and the two divisions of the retromandibular vein emerge through it.

The parotid duct is 5 cm long. It crosses the masseter and at the anterior border of this muscle, it turns inwards, pierces the buccinator, runs deep to the mucosa and opens into the oral cavity opposite the upper second molar tooth.

Many authors feel that the parotid is a bilobed structure. The larger superficial segment of the gland which comprises 70-80% of the entire gland lies superficial to the faciovenous plane of patey and the similar deeper portion lies deep to it.

The external carotid artery the gland through its posteromedial surface and divides into its terminal branches.

The facial nerve is associated with the parotid gland for an important part of its course during which it divides into its external branches. After it exits the stylomastoid foramen, it passes forwards around the neck of the condyle of the mandible and enters the parotid gland, passing superficial to the external carotid artery and the posterior facial vein. At this stage, the nerve usually divides into two main divisions the temperofacial and cervicofacial, these in turn subdivide into at least five main branches-temporal, zygomatic, buccal, mandibular and cervical.

In 70% of cases, anastomotic connections between the two main divisions exist. Anastomotic between the terminal branches of three temperofacial divisions are frequent, anastomosis between the two branches of the cervicofacial is likely to result in permanent paralysis than injury to the cervicofacial division.

SURFACE ANATOMY

The parotid gland’s anterior border is represented by a line passing downwards and forwards from the upper border of the mandibular

condyle to a joint just above the middle of the massester and then downwards and backwards to a point about 2 cm below and behind the angle to the mandible. Its upper border, concave upwards and backwards corresponds to a curved line drawn from the upper border of the mandibular condyle across the lobule straight line joining the ends of the anterior and upper borders.

The parotid duct corresponding to-the middle third of the line drawn from the lower border of the tragus to a point midway between the ala of the nose and the red margin of the upper lip.

BLOOD SUPPLY

Parotid gland has a rich vascularity being supplied by the branches from the external carotid artery through tributaries from the external facial, occipital, posterior auricular, internal maxillary and superficial temporal artery. The venous drainage is to the retromandibular or posterior facial vein. The position of the posterior facial vein is important clinically in that it is lateral to the superficial temporal artery and medial to the nerve and inferiorly it is a reliable land mark for the branches of the facial nerve.

LYMPH DRAINAGE

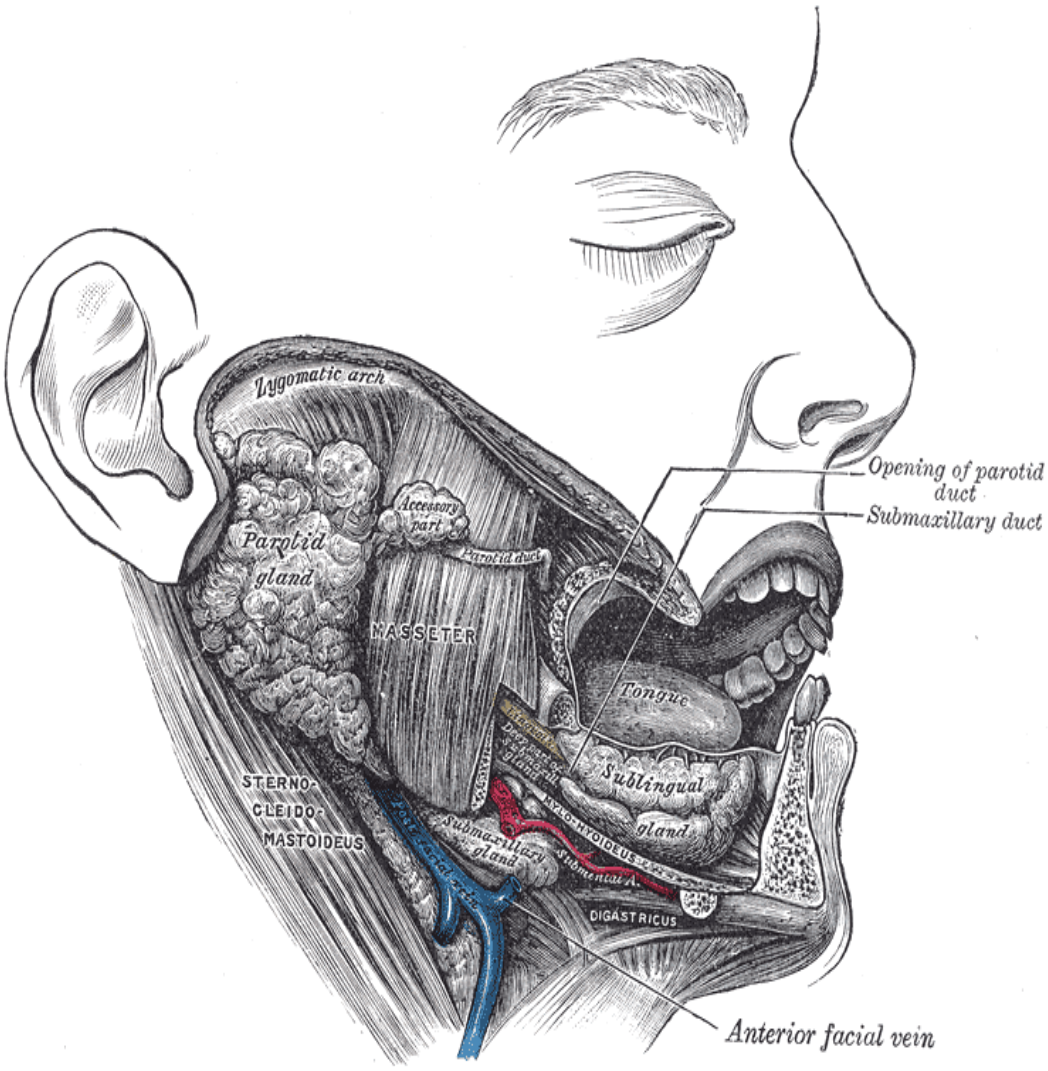
Lymph drains to the intra and extra glandular nodes and then along the external carotid artery to the jugulodigatric and other glands of the anterior superior group of upper deep cervical nodes.

COMPARTMENTS OF THE GLANDS

The parotid may be considered to have 3 compartments. The superficial nerve compartment contains greater auricular nerve, auriculotemporal nerve and facial nerve. The middle venous compartment contains the superficial temporal vein joining the internal maxillary vein to form the posterior facial vein which joins the post auricular vein to form the external jugular vein. The deep arterial compartment contains the external carotid artery, internal maxillary artery and superficial temporal artery.

STRUCTURE OF THE GLAND

It is composed of racemose glands, consisting only of serous alveoli which secrete a thin and watery fluid. Myoephithelial cells are seen around the periphery of the acini and intercalated duct. These act as contractile cells and apparently actively force secretions from the acini and intercalated ducts.


Zygomatic arch
Parotid gland
Accessory part
Parotid duct
MASSETER
Opening of parotid duct
Submaxillary duct
Tongue
Sublingual gland
STERNO-CLEIDO-MASTOIDEUS
Submaxillary gland
Submental A.
DIGASTRICUS
Anterior facial vein

PHYSIOLOGY OF THE PAROTID GLAND

The total quantity of saliva produced during a 24hours period is about 1000-1500ml. About 90% of this fluid is derived from the parotid and submandibular glands in more or less equal amounts.

Parotid gland secretion is controlled by physical and psychic stimulation via the parasympathetic system. Afferent impulses are relayed to the superior and inferior salivatory nucleus with the tympanic branch of the 9th cranial nerve to the tympanic plexus (Jacobson's nerve). From here the lesser superficial petrosal nerve carries impulses to the otic ganglion. Post ganglion fibres reach the parotid via the auriculotemporal nerve. Sympathetic fibres leave the ventral roots of the upper three thoracic ganglions. Post ganglionic fibres reach the parotid via the carotid plexus, traveling with the arterial supply to the gland.

PAROTID NEOPLASMS

Incidence

The incidence of salivary gland tumours in the U.S.A is 1.5 to 2 per 1, 00,000 population of which 80-80%occur in the parotid glands. The incidence of malignancy in period tumours varies from 10-15% to 20-30% in different series.

AETIOLOGY

There is no evidence either clinical or experimental to suggest that in the salivary glands a pre-existing inflammatory, obstructive or traumatic condition predisposes to malignant change. In experimental animals parotid tumours can be induced by carcinogenic hydrocarbons, ionizing radiations and viruses. Vitamin D deficiency may be important.

PATHOGENESIS

An origin of salivary gland tumours from epithelial cells appears to be the current majority view. Some workers have postulated that the cell of origin may be individual cell types like the myoephithelial cells. Various tumours may arise from either intercalated or excretory ducts and this theory is based upon salivary gland embryogenesis and the potential duct epithelium during reactive process.

Electron microscopic studies have suggested that myoephithelial cell plays an important role in the growth and development of pleomorphic adenoma, adenoid cystic carcinoma, adeno lymphoma and oncocytoma.

CLASSIFICATION

The difficulty of histopathological interpretation, the presence of a wide range of histopathological patterns and the variable biological behaviour of salivary gland tumours led to a profusion of classification none of which have been universally accepted until the international classification of salivary tumours was formulated in 1972.

Some of the important classifications are:

I. CLASSIFICATION BY F.W.FOOTE AND E.L.FRAZELL

1. **Mixed tumour**
    a) Benign mixed tumour
    b) Malignant mixed tumour
2. **Mucoepidermoid tumours**
    a) Low grade tumours
    b) High grade tumours
3. **Squamous cells carcinoma**
4. **adeno carcinoma**
    a) Adenoid cystic
    b) Miscellaneous-Trabecular of solid, or anaplastic mucous cells
    c) Acinic cells

5. **Papillary cystadenoma lymphomatosum**

    a) Oxphil adenoma

    b) Sebaceous cell adenoma

    c) Benign lymphoepithelial lesions

    d) Unclassified tumours-Benign and malignant

II. CLASSIFICATION BY DAVID H.PATEY (1969)

A.PRIMARY

1. Epithelial

a) Mixed tumours

b) Mucoepidermoid tumour

c) Cylindroma (adenoid cystic)

d) Carcinoma – squamous cell carcinoma

- Adeno carcinoma

- Undifferentiated carcinoma

e) Aden lymphoma (papillary cystadenoma lymphomatosum)

f) Oxphil cell carcinoma

2. Connective tissue

a) Haemangioma

b) Nueroma

B.SECONDARY

From various sources such as breast, bronchus, malignant melanoma etc.,

III. W.H.O. CLASSIFICATION OF SALIVARY GLAND TUMOURS (THACKRAY AND SOBIN 1972)

1. EPITHELIAL TUMOURS

A. Adenomas

1. Pleomorphic adenoma (mixed tumour)

2. Monomorphic adenoma.

a) Aden lymphoma

b) Oxphilic adenoma

c) Others

B. Mucoepidermoid tumours

C. Acinic cell tumours

D. Carcinoma

1. Adenoid cystic carcinoma

2. Adeno carcinoma

3. Undifferentiated carcinoma

4. Epidermoid carcinoma

5. Carcinoma in pleomorphic adenoma

(Malignant mixed tumour**)**

II. NON EPITHELIAL TUMOURS.

III. UNCLASSIFIED TUMOURS.

IV. ALLIED CONDITIONS.

a. Benign lympho-epithelial lesions
b. Sialosis
c. Oncocytosis

PLEOMORPHIC ADENOMA (Mixed tumour)

It is most common tumour of the salivary gland. It is of epithelial origin and benign. The term pleomorphic was coined by Willis in 1967. it forms 60-70% of all parotid tumours and 80% of all benign tumours. It is usually unilateral. It is purely of epithelial origin. Material in chondromyxoid areas has been considered to be a modified type of mucin, made up of chondroitin, a mucopolysaccaride elaborated by the myoephithelial cells. The maximum incidence is seen in the 5^{th} decade and sex distribution is equal.

Gross pathology

It forms an irregular lobulated, roughly globular mass having a capsule. The cut section is firm and white bluish area of cartilage like appearance. The consistency depends on the amount of mutinous material

and varies from firm to soft. The tumour expands by focal growth producing nodular extensions into the capsule. Operative enucleation of the tumour is frequently responsible for leaving satellite nodules this accounts for frequency and multiplicity of recurrent nodules after such operations.

Microscopic pathology

A mixed tumour consists of epithelial and mesenchyme like elements. In the epithelial component, the cells may be arranged in sheets or lie sparsely in a mucoid of chondromyxomatous matrix. In the mucoid and myxoid areas, myoephithelial cells are present. The cartilaginous areas may calcify or ossify. 10% tumours are highly cellular and such tumours are liable to recur. The tumour is relatively radio resistant and careful local excision with a margin of normal tissue is the treatment of choice.

Foote and Frazell (1954) reported 86 recurrences in 494 patients (17.3%). Superficial parotidectomy will result in a recurrence rate of less than 5%. Post operative irradiations of 6000 to 6500 rads have been added in selected cases in which a subsequent recurrence would be almost impossible to manage surgically. Pleomorphic adenomas after 10,20 or 30 years can turn malignant.

2. MONOMORPHIC ADENOMAS

These benign tumours are characterized by the regularity of their cell structure and pattern

a) **ADENOLYMPHOMA (Warthin's tumour)**

This is the second most benign tumour of the parotid gland. The Aden lymphoma is a distinctive tumour which arises almost constantly in relation to the parotid gland in a superficial location, especially at the lower pole. This benign tumour is believed to arise from heterotypic gland tissue which has become enclosed developmentally in a lymph node. It is the only functional tumour arising from parotid gland.

The lesion appears as a slow growing soft tissue mass in males over the age of 40 years. Commonly the lesion arises multifocally and a striking clinical feature is that bilateral gland involvement occurs in 7 to 10% of cases.

Gross Pathology

Aden lymphoma seen as a rounded or slightly lobulated mass completely encapsulated. It is soft and cystic. The cyst may contain papillae and also musky mutinous substances.

Microscopic Pathology

Histologically, the tumour is composed of glandular and often cystic structures having a papillary cystic pattern lined by columnar cells. A variable amount of lymphoid tissue with follicle formation characterizes the stroma.

Aden lymphoma concentrates 99 TC predestinate at much greater degree than normal salivary tissue.

b) Oxphil Adenoma (Oncocytoma)

This tumour is very uncommon in the parotid. They are round or ovoid, encapsulated, solid tumours of slow growth which usually occurs in a higher age group. The tumour cells resemble oncocytes which are cell derives from the duct epithelium. This tumour has a predilection for older females.

c) Basal Cell Adenoma

This is a rare type of monomorphic adenoma. It is usually found in the superficial part of the gland. It is also slow growing, encapsulated solid tumour seen in older individuals. The histologic picture is very similar to that seen in basal cell carcinoma arising from stratified epithelium.

d) Clear Cell Adenoma

This is also a rare monomorphic adenoma. In this tumour, duct like structures surrounded by clear cells in the position normally occupied by myoephithelial cells is seen.

B. MUCOEPIDERMOID TUMOUR

Mucoepidermoid tumours form 2-5% of all salivary tumours out of which 70-90% occur in the parotid tumours and 25% of malignant parotid tumours. It is commonly seen in the 3^{rd} to 5^{th} decade with an equal withy an equal sex incidence. It is the commonest salivary gland tumour in childhood. It is slow growing and not encapsulated.

Gross Pathology

These tumours are ovoid and well circumscribed. Infiltration may be evident with ulceration of the overlying surface. These tumour always show an attachment to fascia. The cut surface shows solid elements and cyst filled with a viscid mucin.

Microscopic Pathology

It is characterized by the presence of squamous cells, mucus secreting cells and cells considered to be of an intermediate type. Depending on the proportion of each, the tumour may be solid or cystic.

Mucoepidermoid tumours infiltrate locally and though they may metastasise, this ability is limited.

C. ACINIC CELL TUMOUR

This tumour constitutes about 1% of all salivary gland tumours and accounts for 2-4% of all parotid tumours. Similar to warthin's tumour, it may be bilateral. The peak incidence is in the 5^{th} decade. These are solitary lesions, compact, hard and knobby and mobile.

Gross Pathology

This tumour is apparently encapsulated, hard and presents a most grey white cut surface flecked with brown areas. Small cyst containing serous and blood stained fluid may also be found.

Microscopic Pathology

Uniformly round polygonal cells with abundant basophilic and granular cytoplasm are commonly arranged in solid sheets or mosaic fashion. Large non granular and clear cells may be present. Marked PAS reaction of granules within the neoplastic cells may be present. Marked PAS reaction of granules within the neoplastic cells is a useful histochemical reaction in the diagnosis of acinic cell tumour.

A 5 year survival rate of around 90% makes it a much more benign tumour than Mucoepidermoid tumour. Rarely the tumour may infiltrate locally or metastasis.

D. CARCINOMAS

Malignant diseases of the salivary glands are rare. Half of them occur in the parotid. About 25% of parotid tumour are malignant.

The natural course of many of these neoplasms was characterised by long duration, repeated local recurrences, occasional metastasis to the regional lymph nodes and lungs. All these neoplasms tend to present at an early stage to produce obvious clinical signs of malignancy.

1. Adenoid Cystic Carcinoma

This tumour is relatively rare in the parotid gland. It forms 2% of parotid tumours. The peak incidence is in the 6^{th} decade (18%). The incidence of lymph node metastasis from direct or contiguous invasion rather than emboli is low (15%).

Gross Pathology

Adenoid cystic carcinoma usually presents as a firm tumour composed of pink grey tissue with a moist cut surface. It infiltrates slowly and so its margins are ill defined.

MICROSCOPIC PATHOLOGY

This tumour is composed of basal type epithelial cells and of a stroma which is variably hyaline. The epithelial cells may be arranged in solid, granular, cribriform or cystic masses. The adenoid cystic carcinoma is isomorphic lacking the marked and varied stromal changes so characteristic of pleomorphic adenoma. Adenoid cystic carcinoma metastasizes distantly especially to the lungs.

2. ADENOCARCINOMA

Aden carcinoma form 3% of parotid tumours. There is 23% of incidence of preoperative facial paralysis. They are all highly malignant tumours that metastasis widely. Their prognosis is determined by the grade and stage of the tumours rather than by the extent of surgery. Local recurrence of this most lethal tumour exceeds 50%.

3. SQUAMOUS CELL CARCINOMA

This is a rare tumour of parotid glands affecting the males predominantly. This tumour grows rapidly and about one half of the patients have metastatic lymph nodes when first seen.

Gross Pathology

This tumour consists of epithelial cells which form keratin or exhibit intercellular bridges. It arises from the ductal system and the prognosis is grave.

4. UNDIFFERENTIATED CARCINOMA

These are poorly differentiated malignant tumours of epithelial origin. These include the solid undifferentiated carcinoma, Trabecular carcinoma and salivary duct carcinoma. The presence of epithelial and myoephithelial cells in these tumours have been shown by electron microscopy.

5. CARCINOMA IN PLEOMORPHIC ADENOMA

This tumour is one in which there is areas of invasive growth and cellular atypia together with histological areas of typical pleomorphic adenoma.

Malignant change in a previous simple tumour of long standing duration occurs in 2 to 4% cases. There is an accelerated recurrence rate and a high incidence of metastasis (30-70%).

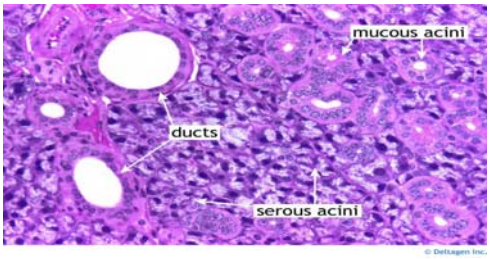
II NON EPITHELIAL TUMOURS

Non epithelial stromal tumours of the parotid are rare. They include haemangioma, lymphangioma, nuerofibroma, lipoma, sarcoma, metastatic tumours and lymphoma. Junaid et. al., has reported a rare incidence of dermatofibrosarcoma protruberans of the parotid gland.

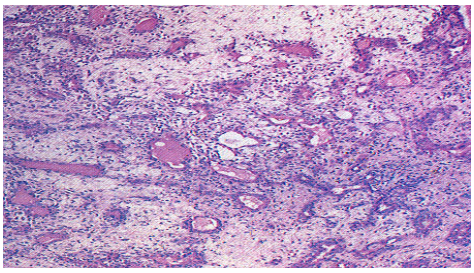
CLINICAL FEATURES:

Tumours of the parotid gland often present with painless or asymptomatic swelling. Usually the mass is situated behind the angle of the jaw or overlying the ramus of the mandible, below and in front of the ear, often lifting the tragus and the ear lobe.

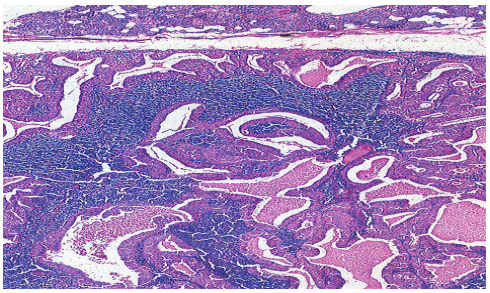
About 10% of the tumours arise in the deep lobe, some of which may present as palatal swelling or rarely as a dumb bell tumour. Accessory parotid is the site of tumours in 1% of cases. Occasionally parotid tumours may present with pain. Sometimes dull pain may be the only early symptom of a carcinoma of the deep lobe. Malignant tumours commonly present with rapidity of growth and signs of infiltration such as fixation, pain, paralysis of facial muscles, anesthesia of skin or mucous membrane, resorption of adjacent bone, temporomandibular joint involvement and ulceration of skin. The commonest presenting feature of adenoid cystic carcinoma is pain.



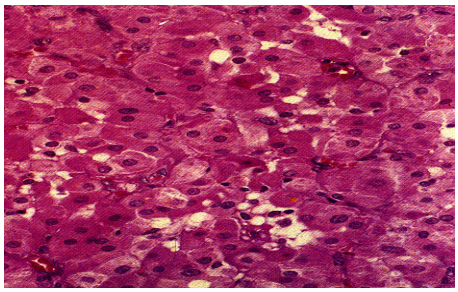
Normal histology



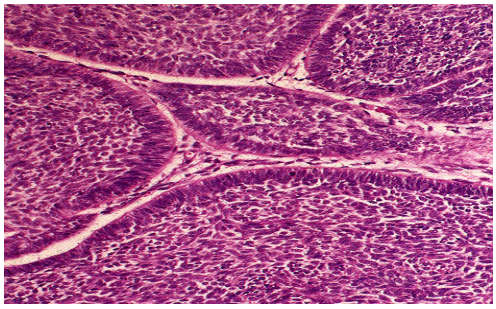
Pleomorpic adenoma



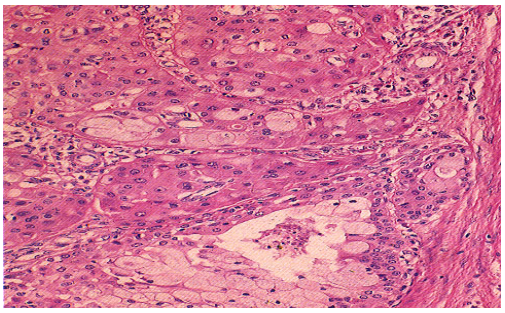
Warthin s Tumour



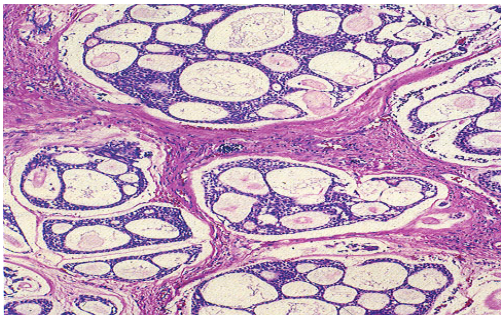
Oncocytoma



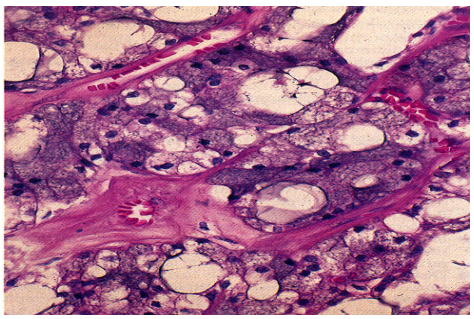
Basal cell adenoma



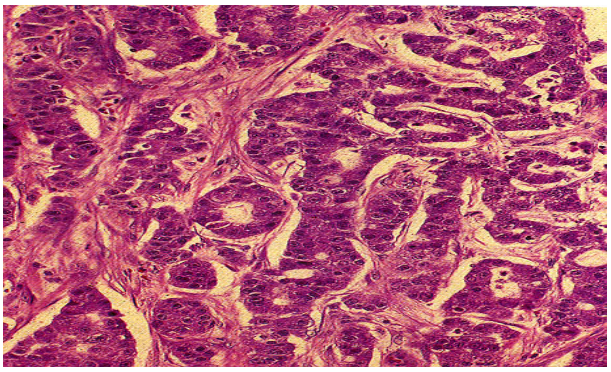
Mucoepidermoid



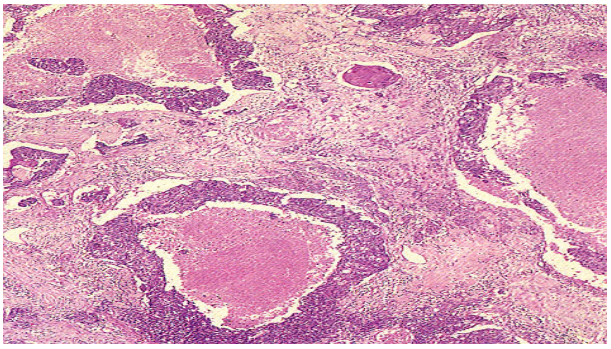
Adenoid cystic carcinoma



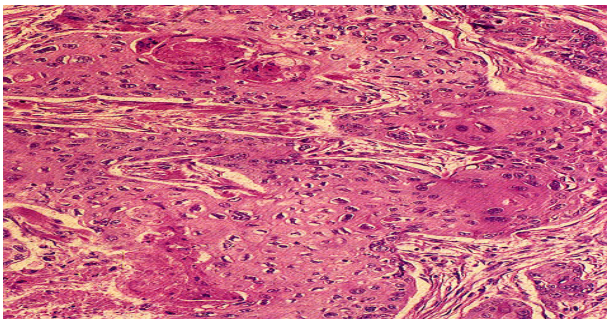
Adenoid cystic carcinoma



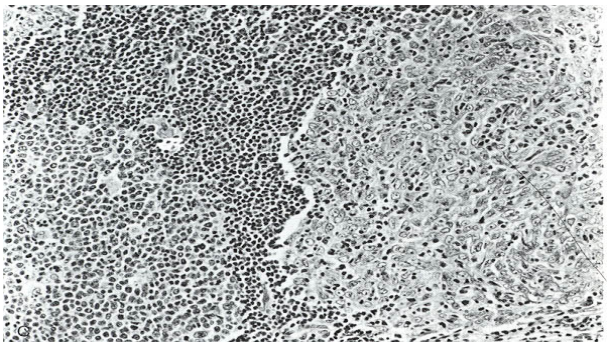
Adeno carcinoma



Malignant pleomorpic



Squamous cell carcinoma



Undifferentiated carcinoma

STAGING OF PAROTID GLAND CANCERS

The American joint committee staging of salivary gland tumours is as follows:

PRIMARY TUMOUR

T_x - Primary tumour cannot be assessed

T_0 - No evidence of primary tumour.

T_1 - Tumour less than 2 cms in greatest dimension without extraparenchymal extension

T_2 - Tumour >2 CM<4cm in greatest dimension without extraparenchymal extension

T_3 - Tumour more than 4 cm and / or tumour having extraparenchymal extension

T_{4a} - Tumour invades skin, mandible, ear canal,and/or facial nerve

T_{4b} - Tumour invades skull base and / or pterygoid plates and/or encases carotid artery.

NODAL INVOLVEMENT

N_x - Regional lymph nodes cannot be assessed

N_0 - No regional lymph node metastasis

N1 - Metastasis in single ipsilateral lymph node, 3 cm or less in greatest dimension

N2a - Metastasis in single ipsilateral LN, > 3 cm but < 6 cm

N2b- Metastasis in multiple ipsilateral LN, none> 6 cm

N2c- Metastasis in bilateral or contralateral LN, none > 6 cm

N3 – Metastasis in a lymph node, more than 6 cm

METASTASIS

M_X - Distant metastasis cannot be assessed

M_0 - No distant metastasis

M_1 - Distant metastasis to lungs, bone etc.,

STAGE GROUPING	**T**	**N**	**M**
STAGE I	T1	N0	M0
STAGE II	T2	N0	M0
STAGE III	T3	N1	M0
	T1	N1	M0
	T2	N1	M0
	T3	NO	M0
STAGE IVA	T4a	N1	M0
	T4a	N2	M0
	T1	N2	M0
	T2	N2	M0
	T3	N2	M0
	T4a	N2	M0
STAGE IVB	Tb	Any N	M0
	Any T	N3	M0
STAGE IVC	Any T	Any N	M1

INVESTIGATIONS

A number of diagnostic tests are available. They are,

1. Sialography

It is done by injecting 1-2cc of a various contrast medium (Lipoidol), over distension is avoided by stopping the injection when the patient complains of pain. Sialography fails to detect parotid neoplasms less than 1cm in diameter. It can however give an idea of deep lobe involvement. Benign lesions displace the ductal system whereas malignant lesions may infiltrate it causing ductal obstruction.

2. Radiosialography

For Radiosialography 1 Mci of 99 TcM labeled sodium pertechtinate is injected intravenously and the parotids are scanned using a gamma camera. All parotid neoplasms other than Warthin's tumour and oncocytoma are radionegative.

3. Ultrasonography

Both benign and malignant lesions appear as solid masses except Warthin's tumour which is sonoluscent at low gain settings while showing internal echoes at high setting.

4. Computed Tomography (CT) and MRI

CT and MRI is currently the radiographic study favoured in the investigations of parotid neoplasms. CT with IV contrast is useful in separating intrinsic parotid masses from paraparotid masses as well as differentiating deep lobe masses from other parapharyngeal space masses. In addition during the same scan axial sections of the neck may be taken to investigative metastatic adenopathy. It is also useful in detecting distant metastasis.

5. Angiography

This is useful in tumours of the parapharyngeal in order to differentiate salivary gland tumour from chemodectoma of the cartotid sheath or a neoplasm of the nerve shealth, both of which have a characteristic tumour circulation.

6. Fine Needle Aspiration Biopsy (FNAC)

This is an important investigation in the diagnosis of a parotid mass. Using this technique Eneroth et an were able to provide tumour diagnosis in 92% of 1000 cases with histologically verified tumours. Frable and frable (1974) reported a diagnostic accuracy of 80% for adenoid cystic carcinoma, 62% for Mucoepidermoid carcinoma, 65% for acinic cell carcinoma 100% in a pleomorphic adenoma. This test is

especially accurate in pleomorphic adenoma. This information obtained from this test can be extremely valuable in planning the operative procedure and in information the patient of the relative likelihood of having to sacrifice all or part of the facial nerve.

7. Incisional Biopsy

Incisional biopsy of the parotid is not without risk. Damage to important neurovascular structures, the creation of salivary fistulas and the contamination of tissue planes by neoplastic cells are the serious risks involved, furthermore, fibrosis at the site of biopsy can make later surgery difficult. On no account should a discrete parotid mass be subjected to Incisional biopsy since there is a 9 cut off 10 chances that the mass is a pleomorphic adenoma, incising which will almost certainly lead to a late recurrence.

8. Frozen section biopsy

The use of frozen sections made during operation overcomes some of the disadvantages outlined above. However the histopathology of salivary gland neoplasm is a complex field and interpretation especially of frozen section can be difficult.

9. Needle biopsy

Needle biopsy using tru-cut or vim silvermann needle can be done under local analgesia, but carries all he risks of Incisional biopsy through of lesser degree. Some authors claim very little spillage along the needle tract.

DIFFERENTIAL DIAGNOSIS OF PAROTID TUMOURS

Some of the rarities that mimic parotid swellings are:

- Hypertrophic masseter
- Winged mandible (in the 1st arch syndrome)
- Dental cysts
- Branchial cysts
- Myxoma of the masseter
- Mandibular tumours
- Lymphadenitis of the preauricular lymph node
- Secondaries of neck.

TREATMENT

TREATMENT OF BENIGN TUMOURS

The treatments of benign tumours have passed through several phases during the last 30 years. Enucleation carried a high recurrence rate

and so it was followed by enucleation and post operative irradiation. But this carried on with it risk of radiation induced cancer in the young. So removal of the growth with a good cuff of normal parotid tissue was practiced later. However this resulted in a facial weakness in some cases. A superficial conservative parotidectomy became the accepted surgery for benign lesions confined to the superficial lobe. For lesions in the deep lobe, a total parotidectomy with conservation of the facial nerve is advisable. In all cases, the patent must be informed preoperatively of the possibility of injury to the nerve and should give his knowledge consent for the treatment.

TREATMEN OF MALIGNANT LESIONS

TREATMENT GROUP	TUMOUR TYPE	TREATMENT
I	T_1&T_2 low grade Mucoepidermoid& acinic cell tumour	Superficial / total conservative parotid dectomy
II	T_1&T_2 low grade Mucoepidermoid& all other tumours	Total parotidectomy (conservative)+ Node dissection for N_1
III	T_3N_0 or N_1	Radial parotidectomy+ node dissection for node positive cases+ post operative radio- therapy + facial nerve reconstruction
IV	T_4	

SURGERY

PAROTIDECTOMY

Parotidectomy may be conservative when all the main branches of the facial nerve are preserved or radical when the entire trunk and portion of the facial nerve is sacrificed. Depending upon the part removed, it may be superficial, deep or total. Deep parotidectomy is not recommended because of risk of fistula formation, moreover, it is difficult to approach the deep lobe with the superficial lobe in situ .Incision used : lazy S.

The basic operation for parotid neoplasm is the superficial parotidectomy. This procedure will suffice for all superficial lobe benign neoplasms. The structure of paramount importance in a parotidectomy is the facial nerve. The only constant location of the nerve has to be traced from this point. There are other approaches which involve identifying a peripheral branch and following it retrograde to the main trunk. Facial nerve function should be checked immediately prior to skin closure, should be performed. Because of the overlying nerve fibres, any effort to remove all of the deep lobe will necessarily be in piecemeal only.

In adenoid cystic carcinoma, the nerve excision should be wide be cause the tumour infiltrate nerve sheaths and eventually travel

intracranically. The facial nerve should be removed well into the mastoid drilling it out of its bony canal.

NECK DISSECTION

Radial neck dissection should be carried out in the presence of involved nodes and this should be done prophylactically for squamous cell carcinoma and undifferentiated carcinoma. Goonde at all (1960) found it helpful to remove a ‘sentinel node’ located at the junction of the anterior and posterior facial vein for frozen early in the operation. If the node is involved by the tumour enblock neck dissection is performed. However the study conducted in the University of Virginia recommends neck dissection only for palpable lymph node Secondaries.

COMPLICATIONS OF PARATIDECTOMY

1. Reactionary Haemorrhage
2. Facial nerve paresis / paralysis
    a. Transient
    b. Permanent
3. Frey’s syndrome
4. Salivary fistula
5. Flap necrosis

6. Infection
7. Keloid
8. Cosmetic disfigurement
9. Paraesthesia of ear lobule
10. Seeding and spillage of tumour cells and consequent recurrence.

RADIO THERAPY

Unfortunately most salivary neoplasms are relatively radioresistant. However radiotherapy has been useful in reducing locoregional recurrence significantly in patients with stage II and stage III disease. A dose of 5000-6000 rads is given to the parotid bed. It is given within 6 weeks after surgery. Most adenoid cystic carcinoma requires post operative radiotherapy irrespective of their site of origin.

The general indications for radiotherapy are:

1. Residual malignant tumour after surgery.
2. Microscopic malignant tumour at resected margin.
3. Unresectable primary carcinoma
4. Unresectable recurrent malignant tumour
5. Malignant lymphoma
6. Metastatic salivary gland carcinoma

Major complications of irradiation include soft tissue ulceration, orocutaneous fistulas and osteoradionecrosis of the mandible.

CHEMOTHERAPY

Recently objective responses with cis-platin or Adriamycin based chemotherapy in some patients with inoperable or metastatic parotid cancer have been observed. Schramm et al., (1981) has shown good response for adenoid cystic carcinoma to cis-platin 80-100mg/m2 at 4-6 weeks intervals with subjective relief of pain and regression of the primary lesion. Responses might be prolonged with addition of radiotherapy.

PROGNOSIS

Prognosis of benign tumours is excellent with no recurrence provided the treatment is by adequate resection. The prognosis of low grade Mucoepidermoid and acinic cell tumours is good. Adenoid cystic carcinoma has a five years survival rate of 60-80%. The malignant pleomorphic adenoma has the worst prognosis among all parotid gland neoplasms.

AIM OF STUDY

1. To review the literature of parotid gland tumours in the light of their histologic classification.
2. To analyse the various modes of clinical presentation and their correlation with histopathology.
3. To compare the incidence, clinicopathological presentation and method of treatment of this study with various other reports in the literature.
4. To infer whether a more radical procedure is associated with a greater risk to the facial nerve.
5. To study whether recurrence after a conservative procedure is controllable by further surgery without undue risk to the patient.
6. To study the effectiveness of radiotherapy in the post operative management of malignant parotid tumours.
7. To study the effect of chemotherapy in the management of inoperable malignant tumours.

MATERIALS AND METHODS

54 cases of parotid tumours treated in Govt.Rajaji Hospital, Madurai during the period of 24 months (Oct 2006 to Oct 2008) have been taken for the present study. It has been taken and recorded according to the proforma given below.

The diagnosis of parotid tumour was made with the aid of clinical findings. A special investigation like fine needle aspiration cytology was done in most cases. 43 out 54 cases were subjected to surgical treatment. The confirmation of diagnosis and identification of specific type of tumour was done by histopathological examination of the excised specimen. Radiotherapy was given for appropriate cases following surgery.

Follow up of the patients have been done by asking them to report for check up. Effective follow up has been possible for only about 3-6 months following treatment, many being lost to follow up after that.

PAROTID GLAND NEOPLASMS

A CLINICOPATHOLOGICAL ANALYSIS

PROFORMA

SI. NO OP/IP NO. WARD NO.

NAME AGE SEX:

ADDRESS RELIGION

OCCUPATION INCOME

Date of Admission :

Date of Operation :

Date of Discharge :

Complaints and history of present illness:

1. Swelling in the parotid region
    a. Duration
    b. Unilateral / Bilateral
    c. Mode of onset- Acute / insidious
    d. Progress of symptoms
2. Pain-Present / Absent

    If present any relation with food intake or seeing food.
3. Fever-Present / Absent

4. Discharge from stenson's duct – Present / Absent

   If present-nature of discharge- Purulent/Watery-Quantity little/profuse

5. Any other swellings
6. Loss of appetite
7. Loss of weight
8. Abdominal pain
9. Others

PAST HISTORY

1. Mumps
2. Trauma to parotid area
3. Diabetes mellitus
4. Hypertension
5. Jaundice
6. Similar illness
7. Treatment-if any
8. Operations- if any

FAMILY HISTORY

1. Members in family with similar illness

PERSONAL HISTORY

Diet Addictions -smoking, alcohol, tobacco chewing

LOCAL EXAMINATION

Inspection

1. Unilateral / bilateral
2. Site

3. Size
4. Shape
5. Diffuse / Localised
6. Surface-Smooth / irregular
7. Skin over the swelling
8. Visible pulsations-present / absent
9. Ear lobe lifted or not
10. Oral cavity, Stenson’s duct orifice
11. Tonsils and oropharynx
12. Stenson’s duct orifice
13. Mandibulo mastoid groove obliterated or not

Palpation

1. Temperature over the swelling- Normal/raised
2. Tenderness-Present/absent
3. Consistency-Soft/firm/hard/variable
4. Mobility-Absent/present/restricted
5. Fixity to the surrounding structures-Present/absent
6. Plane of swelling / Bimanual palpation
7. Pulsation-present/absent
8. Thrill-present/absent
9. Transluminency-present/absent

Auscultation Bruit-present/absent

B.STENSON'S DUCT:

a. discharge-present/absent

If present-nature-purulent/watery-quantity

b. Stones-present/absent

c. Strictures-if any

d. Thickening of the duct-if any

C. Fistula if any

D. Movement of the jaw

E. Involvement of facial nerve

F. Enlargement of lymphnodes

G. Other relevant of lymphnodes

H. Examination of Oral cavity

Oro pharynx

Systematic examination

1. CNS
2. CVS
3. R.S.
4. GIT

TREATMENT

A) Surgery

a. Type

b. Findings

c. Post operative period

d. Post operative complications if any

1. Wound infection
2. Fistula
3. Injury to facial nerve
4. Recurrence
5. Any other complications

B) Radio therapy

C) Chemotherapy

Post surgical histopathology report

Follow-Up:

OBSERVATIONS

TABLE I

INCIDENCE OF PAROTID TUMOURS DURING THE PERIOD

Type of patients	Total number of admissions	Total number of parotid tumours	% of parotid tumours
All cases	72113	54	0.0748

TABLE II

INCIDENCE OF EPITHELIAL AND NON-EPITHELIAL TUMOURS OF PAROTID GLAND IN THE STUDY

S.NO	Type of tumour	Number of cases	Percentage
1	Epithelial	54	100.0
2	Non epithelial	0	0
	Total	54	100.0

TABLE III

INCIDENCE OF BENIGN AND MALIGNANT EPITHELIAL TUMOURS OF THE PAROTID GLAND IN THE STUDY

S.NO	Type of tumour	Number of cases	Percentage
1	Benign	39	72.22
2	Malignant	15	27.77
	Total	54	100.0

INCIDENCE OF BENIGN AND MALIGNANT EPITHELIAL TUMOURS OF THE PAROTID GLAND IN THIS STUDY

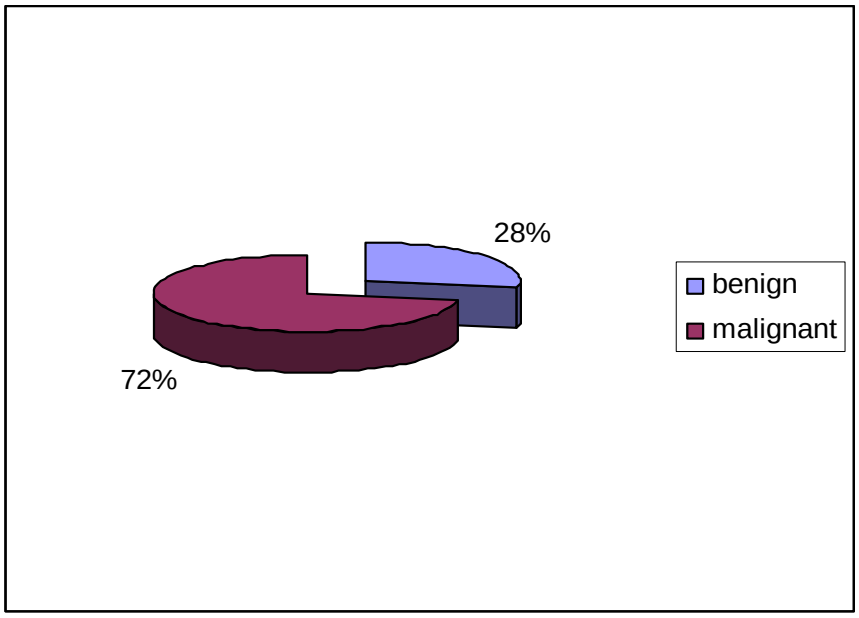
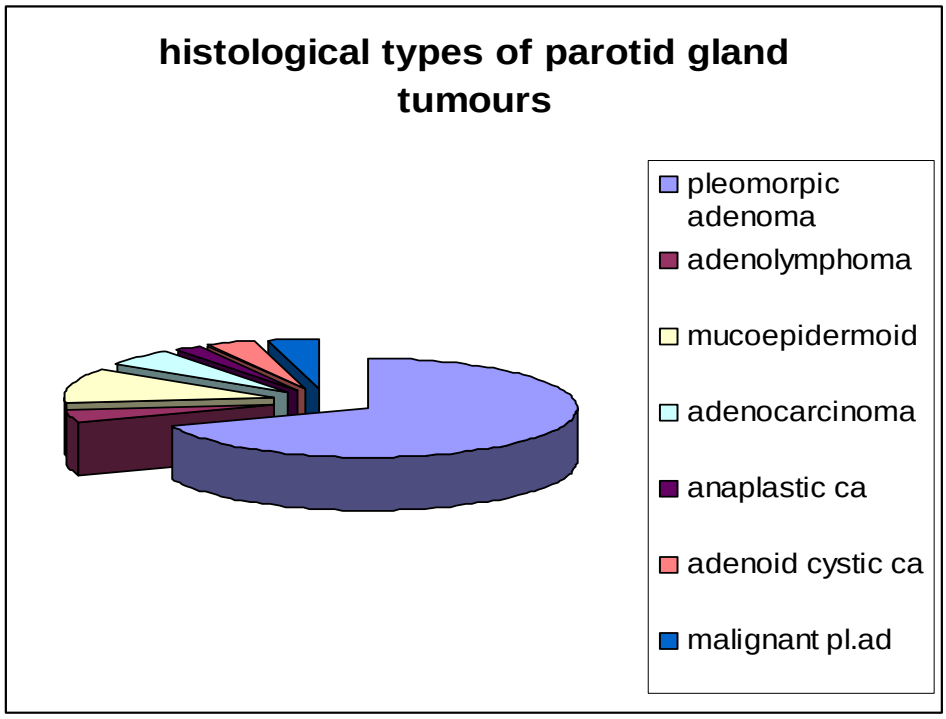


TABLE IV

INCIDENCE OF VARIOUS HISTOLOGICAL TYPES OF EPITHELIAL TUMOURS OF THE PAROTID GLAND IN THE STUDY

S.No	Type of tumours	No. of cases of total	Percentage	Male	Female
1	**Benign**	39	72.22	28	11
	a)Pleomorphic adenoma	37	94.87	26	11
	b)Adenolymphoma	2	5.12	2	0
2	**Malignant**	15	27.77	11	4
	a)Mucoepidermoid tumour	7	46.67	5	2
	b) Adenocarcinoma	3	20.00	3	0
	c) Anaplastic carcinoma	1	6.66	1	0
	d) Adenoid cystic carcinoma	2	13.33	1	1
	e) Malignant pleomorphic	2	13.33	1	1



Pleomorpic adenoma	66.66%
Adenolymphoma	3.7%
Mucoepidermoid	11.11%
Adenocarcinoma	5.55%
Anaplastic ca	1.85%
Adenoid cystic ca	3.7%
Malignant pl. adenoma	3.7%

TABLE V

PRESENTING SYMPTOMS AND SIGNS OF 52 PATIENTS WITH PAROTID GLAND TUMOUR IN THE STUDY

S.No.	Presenting symptoms	No of cases	%
1	Mass only	33	63.46
2	Mass with pain	15	28.84
3	Mass with facial palsy	5	9.62
4	Mass with ulceration or skin fixity	5	9.62
5	Mass with recent rapid increase in size	4	7.69
6	Mass with temporomandibular joint involvement	3	5.77
7	Mass with upper deep cervical nodes	4	7.69

A mass in the parotid region was the most consistent presenting complaint and was present in all 54 cases. Left parotid gland was the seat of tumour in 36 cases and right in 18 cases. No bilateral tumours were seen. The mass was smooth surfaced in 6 cases and nodular in 48 cases.

Among the malignant tumours the pre-operative diagnosis was correct in 10 cases. 2 cases that presented only with a mass were diagnosed as pleomorphic adenoma and FNAC was inconclusive. The histological type-Mucoepidermoid carcinoma was proved by the histopathological report of the surgical specimen.

Pleomorphic adenoma

There were 37 cases of pleomorphic adenoma in this series forming 33 % of all epithial tumours and 94.73 of all benign tumours. There were 28 males and 11 females with a male female ratio of 2:1. The youngest patient was a 16 year old male patient and the oldest was a 66 year old male patient. Maximum incidence was seen between 30-40 years.

TABLE VI

AGE AND SEX DISTRIBUTION OF 36 CASES OF PLEOMORPHIC ADENOMA

Age group	Total no. of cases	Males	Females
11-20	1	1	0
21-30	4	1	3
31-40	13	11	5
41-50	11	9	2
51-60	4	3	1
61-70	3	3	0
Total	36	28	11

TABLE VII

PRESENTING SYMPTOMS AND SIGNS OF 37 PATIENTS WITH PLEOMORPHIC ADENOMA IN THE STUDY

S.NO	Presenting symptom and signs	No. of cases	Percentage
1	Mass only	30	81.08
2	Mass with pain	6	16.21
3	Mass with ulceration	-	-
4	Recurrent mass	1	2.70
5	Mass with facial palsy	-	-

An asymptomatic parotid lump was the most common presenting feature. Most of the lesions were present for 1 to 4 years prior to diagnosis. One patient had involvement of both lobes while in all the rest, only the superficial lobe was involved. The diagnosis was based mainly on clinical examination. FNAC was done in all cases. It offered positive rate 91.89% (34 out of 37 cases).

TABLE VIII

SURGICAL TREATMENT OF 32 CASES OF PLEOMORPHIC ADENOMA

S.No.	Surgery	Number of cases	Percentage
1	Superficial parotidectomy	29	78.37
2	Total parotidectomy (conservative)	3	8.19
3	No surgical treatment	5	13.51

5 patients were not offered any surgical treatment. One patient was severely anaemic (Hb 3.8 gm %) and a hypertensive. Another patient was a female patient who was engaged – to be married the next month. So when the risk of injury to the facial nerve was explained to her, she refused surgery. The other three patients left the hospital when surgery advised to them.

TABLE IX

POST OPERATIVE COMPLICATIONS SEEN IN THE 32 OPERATED CASES

S.No	Complication	Number of cases	Percentage
1	Facial nerve palsy	6	18.75
	a) Transient	4	12.5
	b) Persisting	2	6.25
2	Haematoma	2	6.25
3	Seroma	-	-
4	Wound infection	2	6.25
5	Salivary fistula	1	3.13
6	Flap necrosis	3	9.38
7	Keloid	-	-
8	Recurrence	1	3.13

Facial nerve palsy was seen in 6 patients. It recovered within 6 weeks in 4 patients, 2 patients had persisting facial palsy 3 months follow up. Both the cases had undergone enucleation. The buccal branch was affected in both the cases and the zygomatic branch in one case. There was no incidence of Frey's syndrome. One patient, when enucleation was

done, presented after 12 months with recurrence of the lesion. He refused any further intervention by way of surgery.

Adenolymphoma (Warthin's tumour)

In this series, there were two cases of Adenolymphoma. Both were male patients, one 58 years old and the other 62 years old. The duration of symptoms was 6 years and 3 years respectively. Mass was the only presenting symptom. It was soft in consistency and mobile. Both did not have facial palsy. FNAC was done in both cases. The report came as benign epithelial cells. The surgical treatment were as follows:

Superficial parotidectomy-1

Enucleation-1

The patient for whom enucleation was done developed post operative facial palsy.

MALIGNANT TUMOURS

There were 15 patients with malignant tumour in this series. There were 11 males and 4 females patients. The size of the lesions varied from 4 to 20 cms, 9 of them had pain at the time of presentation 5 of them had facial nerve involvement. 5 of them had ulceration or skin fixity. 3 of them had temporomandibular joint involvement and 4 had involvement of the upper deep cervical nodes.

TABLE X

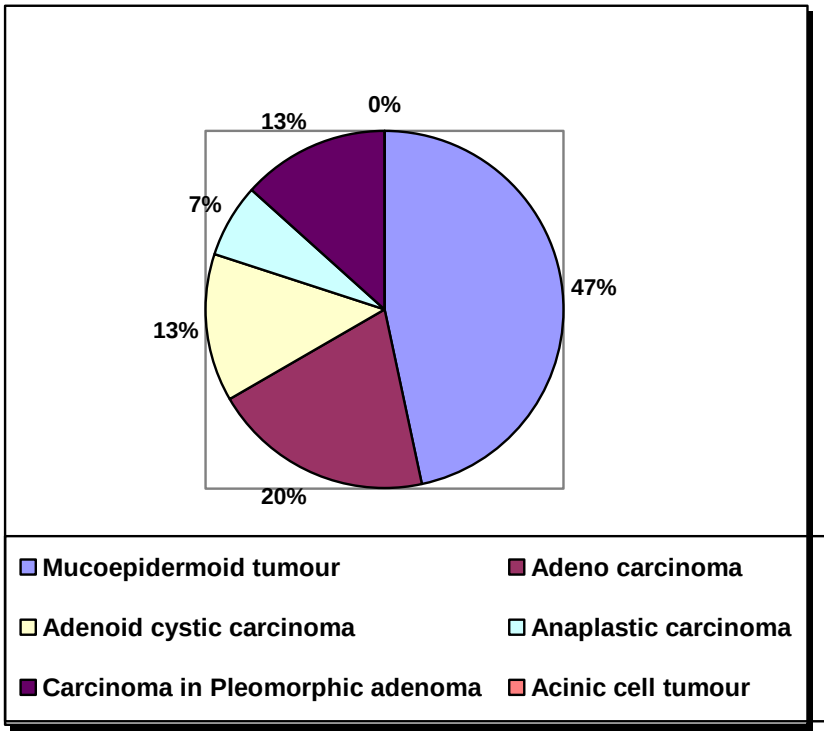
THE INCIDENCE OF VARIOUS TYPES OF MALIGNANT TUMOURS OF THE PAROTID GLAND IN THE STUDY

S.No	Type of tumour	Number of cases	Percentage
1	Mucoepidermoid tumour	7	46.66
2	Adeno carcinoma	3	20.00
3	Adenoid cystic carcinoma	2	13.33
4	Anaplastic carcinoma	1	6.66
5	Carcinoma in pleomorphic adenoma	2	13.33
6	Acinic cell tumour	-	-
	Total	15	100.00

Mucoepidermoid tumour

There were 7 patients with tumour. All the patients were over 50 years of age. 3 out of the 7 patients presented only with a mass and no other symptoms. None of the patients had facial palsy. 2 patients had skin ulceration. FNAC was done for all the patients. It was negative in the two patients, with mass only. It showed dysplastic cells in the remaining 45 patients. For the two patients who presented with mass only it was

THE INCIDENCE OF VARIOUS TYPES OF MALIGNANT TUMOURS OF THE PAROTID GLAND IN THIS STUDY



misdiagnosed as pleomorphic adenoma and a superficial parotidectomy was done. The post operative histological report came as mucoepidermoid carcinoma. These patients were given postoperative radio therapy. For 4 patients total conservative parotidectomy was done, post operative radio therapy was not given to the patients. There has been no recurrences in the short follow up. Two patients developed wound infection in the post operative period. 1 patient left the hospital when adviced surgery.

Adeno carcinoma

The incidence of Adenocarcinoma in this series is 20%. One of these patients presented with facial nerve involvement and ipsilateral upper deep cervical nodes. The other patient had involvement of the facial nerve and infiltration of the growth into the tempereromandibular joint with associated truisms. For the first patient a radical parotidectomy with ipsilateral neck dissection was done. Post operatively the patient was subjected to radiotherapy. There was no recurrence during the short follow up. The latter patient was put on chemotherapy using cis-platin, cyclophosphamide and 5- fluorouracil. The patient showed no response to chemotherapy initially and was lost to follow up after 2 months.

Anaplastic carcinoma

The incidence of anaplastic carcinoma in this series is 6.66%. A 50 years old male patient presents with a mass, facial nerve involvement, upper cervical nodes, temporomandibular joint involvement and skin fixity. FNAC showed dysplastic epithelial cells. Neoadjuant CT, followed by debunking parotidectomy and post operative radiotherapy was given;

Adenoid cystic carcinoma

The incidence of adenoid cystic carcinoma in this study was 13.33% a 40 year old female patient presented with a recurrent ulceroproliferative growth in the right parotid region. The histopathological report was adenoid cystic carcinoma. She was put on chemotherapy cis-platin, cyclophosphamide and 5-flurouracil, initial response to chemotherapy was satisfactory with reduction of pain and in the size of lesion. The patient was lost to follow up.

Malignant pleomorphic adenoma:

The incidence of malignant pleomorphic adenoma in this series is 13.33%. Both the patients had tumour in the region of the parotid for long duration (8 and 11 years) and there is a history of sudden increase in size, in both cases. One had involvement of the facial nerve, upper deep

cervical nodes and the temporomandibular joint. This patient was put on chemotherapy with cis-platin.

The other patient had skin involvement and a mass. A radical parotidectomy with post operative radiotherapy was given to the patient. The histopathological report was pleomorphic adenoma turning malignant, squamous cell type. Tumour recurrence was not noted at follow up. (2 months)

TABLE XI

TREATMENT OFFERED TO MALIGNANT PAROTID TUMOUIRS IN THE STUDY

S.No	Treatment	Number of cases	Percentage
1	Superficial parotidectomy and post operative radiotherapy	3	21.42
2	Total parotidectomy	5	35.71
3	Radical parotidectomy	-	-
4	Radical parotidectomy with post operative radiotherapy	2	14.29
5	Radical parotidectomy with lymph node dissection + radiotherapy	1	7.14
6	Chemotherapy only	3	21.43
	Total	14	100.0%

DISCUSSION

The present study is based on a small series and short follow up Hence it is a difficult task to compare the present study with those found in the literature and arrive at a meaningful conclusion. However a sincere effort is made to do so in the following pages.

PLEOTROPHIC ADENOMA

This is the commonest benign tumour. In this series mixed tumour comprised 68.52% of all the parotid tumours and 94.87% of all benign tumours. In Foote and Frazxell series it forms 56% of all salivary tumours. In this series the maximum number of mixed tumour was found in 31-40 years age group which is in concordance with Sireat's series in which the maximum incidence is noted in the 4^{th} decade.

TABLE XII

COMPARTIVE STUDY OF DIFFERENT PAROTID TUMOURS

IN THE STUDY WITH THE REPORTS OF VARIOUSAUTHORS

S. No.	Type of tumour	Thanckaray & Lintus	Toraya et al	Sindha et al	Saksela et al	Present study
1	Pleomorphic adenoma	74.0	70.5	60.0	60.4	68.52
2	Monomorphic adenoma	8.6	12.7	18.5	6.6	3.70
3	Mucoepidermoid	3.2	2.1	6.8	7.5	12.96
4	Acinic cell	2.3	-	2.0	1.9	-
5	Carcinoma	11.9	14.7	12.7	23.6	14.81

In this study mixed tumour has got a male preponderance ratio of 2:1. The other studies in the literature showed a female preponderance.

As regarding the treatment, superficial parotidectomy is the accepted modality of treatment if only the superficial lobe is involved. Total parotidectomy is required only if both lobes are involved Enucleation is not an accepted modality of treatment since in this study

showed a high recurrence rate (25%) and a greater risk of injury to the facial nerve (50%).

FNAC has true positive rate 86.9% in diagnosing this condition and it must be performed in all cases. No complications were noted following this investigation.

ADENOLYMPHOMA

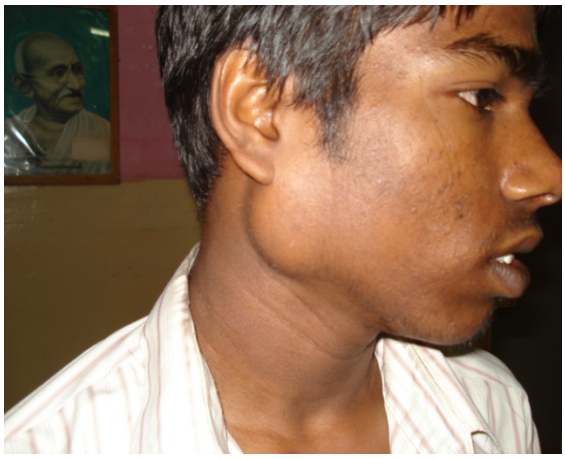
In this series, there were only 2 cases (5.12%) in contrast to other studies that report a higher incidence of this tumour. Both the patients are males which are in accordance to the other studies which showed a male predominance. A swelling was the presenting complaint in both cases. Soft, cystic parotid swelling (Benign) is almost diagnostic of the condition except in confirming that it is a benign swelling. Superficial parotidectomy is curative.

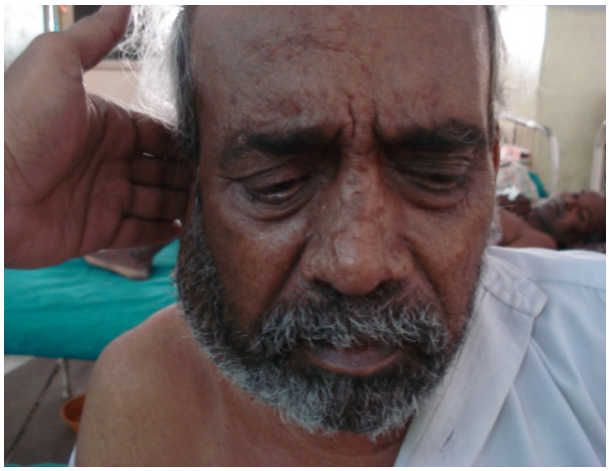
MALIGNANT TUMOURS

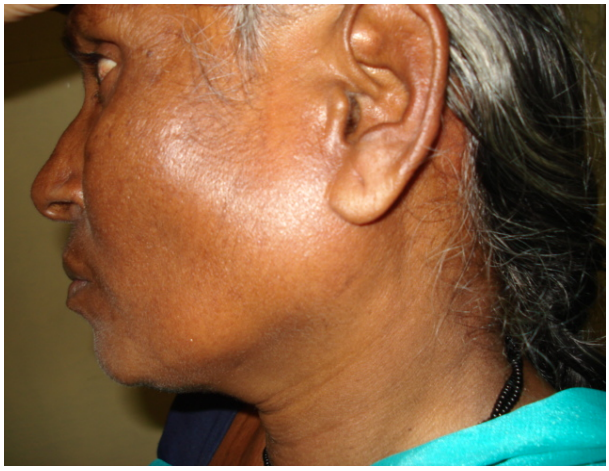
There were 15 cases of malignant tumours in this series. It forms 27.77% of all neoplasms of the parotid. Among them, Mucoepidermoid formed the majority. There was no acinic cell tumour in this series. Out of the 15 cases 11 were, males and 4 were females. In this series, malignancy was seen after the 4^{th} decade (older age group)

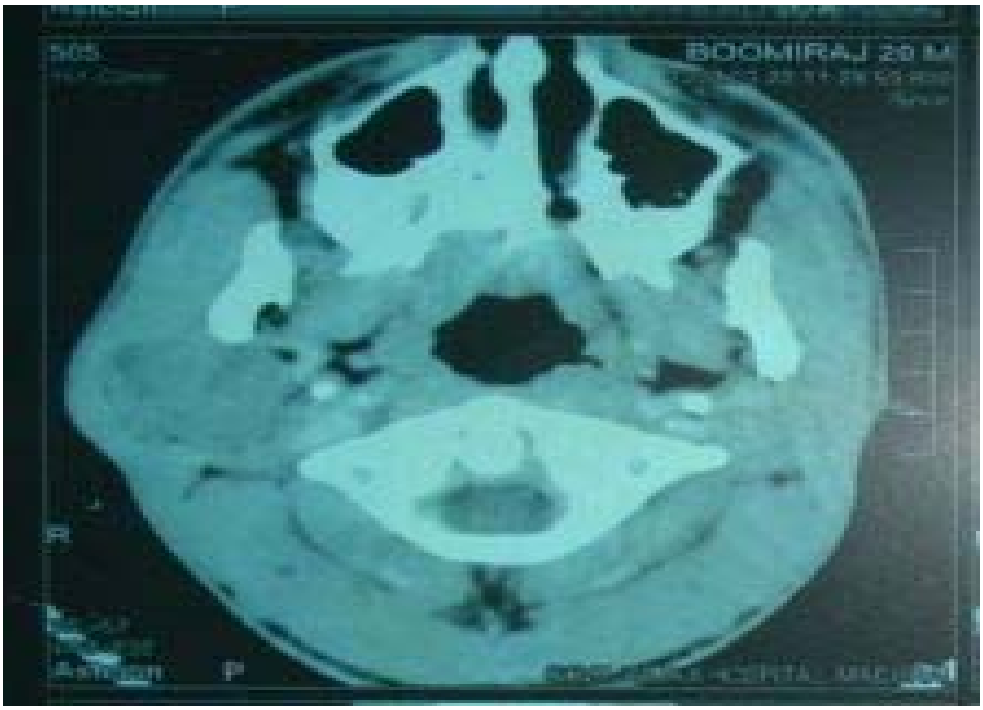
The presence of a mass is the most consistent finding in all cases. Malignant pleomorphic adenoma has the same natural history of its benign counterpart, but is showed an initial slow growth followed by rapid increase in size. Pain was present in 9 patients. Facial nerve was involved in 5 patients. Secondary lymph node involvement was present in 4 cases. Temporomandibular joint was involved in 3 cases.

Out of 15 cases of period malignancy, radical parotidectomy was done for 2 cases, lymph node dissection was done for one patient. For the 7 cases of Mucoepidermoid carcinoma 3 cases were misdiagnosed as pleomorphic adenoma, since FNAC was inconclusive. For these patients a superficial parotidectomy was done. Post operative histopathological examination revealed the true nature of the lesion. These patients were given post operative radio therapy. The remaining 4 patients had a total parotidectomy done and no radio therapy was given post operatively. The patient with adenoid cystic carcinoma was put on chemotherapy with cis-platin. The remaining 2 patients were put on chemotherapy since they had advance lesions with involvement of temporomandibular joint. In one patient debulking parotidectomy was done following neoadjuvant chemotherapy and post operative radio therapy was given.

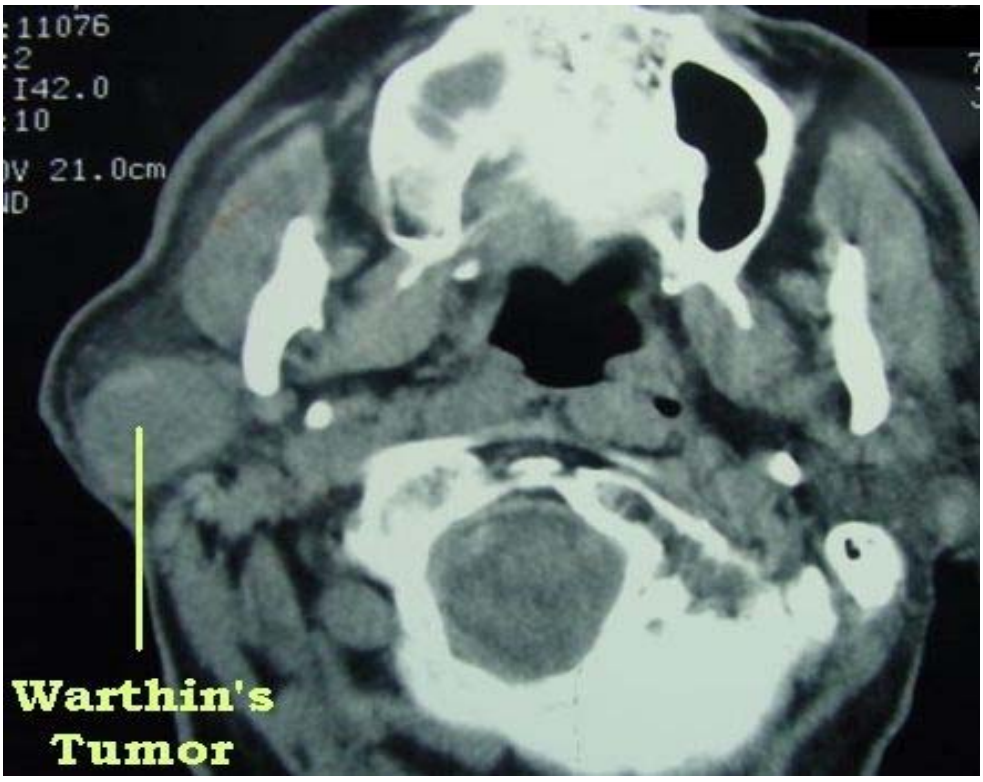




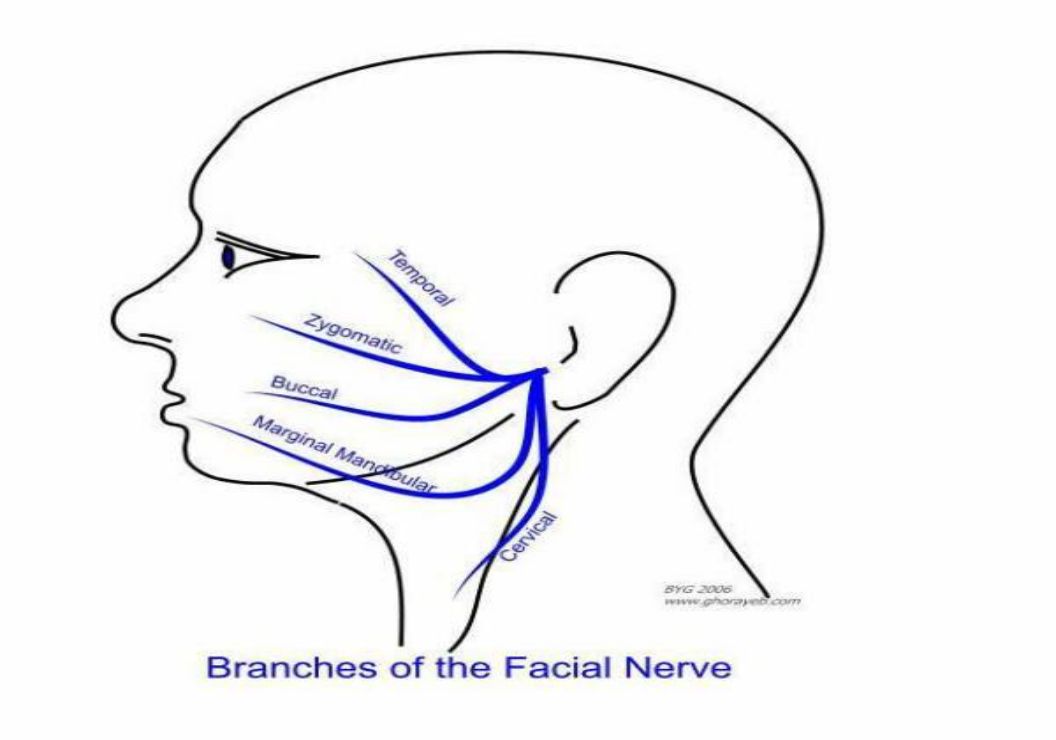


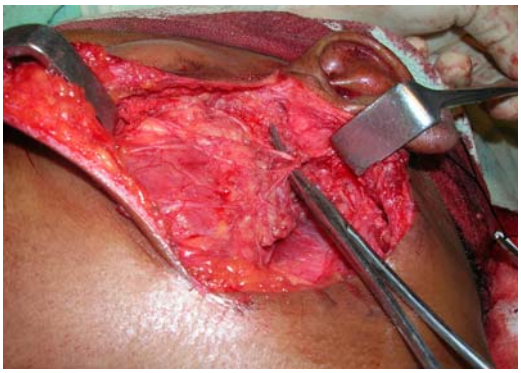


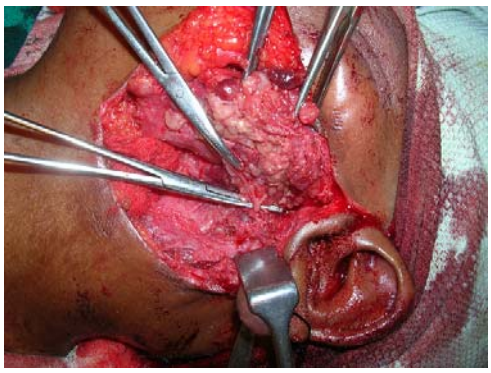
Rt pleomorpic adenoma

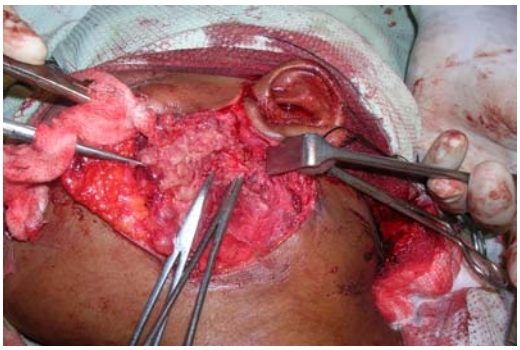


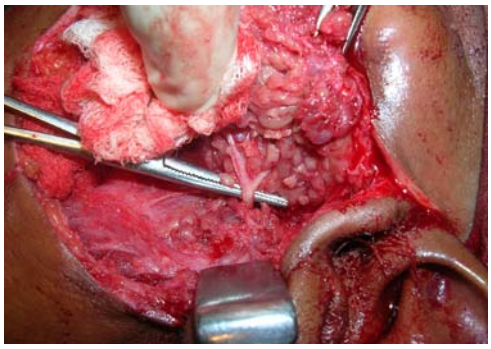
Warthin s tumour


Temporal
Zygomatic
Buccal
Marginal Mandibular
Cervical
BYG 2006
www.ghorayeb.com
Branches of the Facial Nerve









SUMMARY

The clinical findings and histological features of 54 cases of parotid gland tumours treated at Govt.Rajaji hospital, Madurai from Oct 2006 to Oct 2008 were studied. Parotid gland tumours were uncommon tumours forming only 0.073% of all cases admitted in the hospital. The study illustrates a wide variation in the natural history and degree of malignancy of parotid tumours. The clinical features of benign tumours had definite bearing on the final histopathological with no complication. FNAC is a reliable investigation for benign tumours with no complication. FNAC is useful in malignant tumours also, being positive in 11 out of 15 cases (73.33%). But FNAC could not provide the histopathological type of tumour in most case. So is there a role for Tru-cut biopsy in these cases doubtful cases.

For most benign tumours the approved treatment is superficial conservative parotidectomy which has been followed in this series. The disadvantages of enucleation, namely recurrence and facial nerve injury are thus minimized. The facial nerve should be visualized and preserved. The risk of nerve does not increase with the extent of the surgical procedure as long as the facial nerve is identified and preserved.

Total parotidectomy was done for Mucoepidermoid tumours without involvement of the facial nerve. Chemotherapy showed fairly good result in adenoid cystic carcinoma providing symptomatic relief and reduction in the size of the lesion. It was not much use in the other tumours in which it was used.

CONCLUSION

1. Incidence of parotid tumours was 0.074% of all cases admitted to Govt.Rajaji hospital, Madurai during the twenty four months of study. So they are an uncommon pathology.
2. Benign tumours form the majority 72.22% of parotid neoplasms pleomorphic adenoma being the commonest 68.52%
3. Superficial lobe was the commonest site for tumour formation.
4. There was a male preponderance of 2:1in parotid tumours.
5. Higher incidence of parotid tumour was found in the 4^{th} and 5^{th} decades of life.
6. Mass in the parotid region was the commonest mode of presentation of parotid tumours.
7. The clinical features of benign tumours have a definite bearing on the final histopathological diagnosis and are therefore a reliable guide for the preoperative diagnosis and treatment of benign parotid tumours.
8. Maximum incidence of pleomorphic adenoma was between 31-40 years of age with a male preponderance
9. An asymptomatic lump was the most common mode of presentation of pleomorphic adenoma.

10. Adenolymphoma showed a 100% male predominance in this study with both the cases in the 6th decade.
11. FNAC is a useful diagnostic tool in the diagnosis of benign parotid tumours with virtually no complication.
12. The study illustrates wide variations in the natural history and degree of malignancy of parotid tumours.

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s.no.	name	age	sex	mass	pain	Facianerveerve	Lymph node	skin	tmjt	recurrence	fnac	surgery	Final diagnosis
1	**Alagu**	16	m	+								-	PA
2	**Bomiraj**	20	m	+								SP	PA
3	**Mustafa**	36	m	+								SP	PA
4	**Shanmugam**	37	m	+								SP	PA
5	**Kavitha**	25	f	+								-	PA
6	**Ganesan**	39	m	+								SP	PA
7	**Arupadai**	37	m	+								SP	PA
8	**Vetrivel**	33	m	+								SP	PA
9	**Mariammal**	29	f	+								SP	PA
10	**Rajakumari**	28	f	+								SP	PA
12	**Karuppaiah**	37	m	+								SP	PA
13	**Lenin**	38	m	+								SP	PA
14	**Arivoli**	37	m	+								SP	PA
15	**Palaniamma**	39	f	+								-	PA
16	**Anbarasan**	45	m	+								SP	PA
17	**Subburaj**	46	m	+								SP	PA
18	**Arbudaraj**	42	m	+								SP	PA
19	**Palani**	41	m	+								SP	PA
20	**Karunanidi**	47	m	+								SP	PA

s.no	name	age	sex	mass	pain	Facial N	LN	skin	tmjt	recurrence	fnac	surgery	Final diagnosis
21	**Mariamma**	37	f	+								SP	PA
22	**Kalirajan**	55	m	+								SP	PA
23	**Nallusamy**	54	m	+								CTP	PA
24	**Siluvai**	36	m	+								SP	PA
25	**Karpagavalli**	40	f							+		-	AdCC
26	**Thangapandi**	63	m	+								CTP	PA
27	**Sivasamy**	36	m	+								-	PA
28	**Tirutani**	66	m	+								CTP	PA
29	**Pitchaiamal**	36	f	+								SP	PA
30	**Md yusuf**	50	m	+		+	+	+				-	An.C
31	**Rajappa**		m	+				+				TP	MEC
32	**Mariappan**	58	m									SP	AL
33	**Guru**		m	+							PA	SP	MEC
34	**Nallammal**		f	+		-		+				-	MPA
35	**Santhanam**		m									CT	AdCC
36	**Erulappan**		m			+	+					-	AC
37	**Natrayan**		m	+				+				TP	MEC
38	**Mookan**		m			+	+	+	+			CT	AC
39	**Duraisamy**		m			+		+	+			CT	AC
40	**Padinetu**	33	m	+								-	PA

s.no	name	age	sex	mass	pain	Facial N	LN	skin	tmjt	recurrence	fnac	surgery	Final diagnosis
41	**Kamarnisha**	45	f	+								SP	PA
42	**Maria**	46	f	+								SP	PA
43	**Subramani**	48	m	+								SP	PA
44	**Muthulaxmi**		f	+							PA	SP	MEC
45	**Dandapani**	46	m	+								SP	PA
46	**Ramachetiar**	47	m	+								SP	PA
47	**Vasuki**	55	f	+								SP	PA
48	**Deivani**		f	+							PA	SP	MEC
49	**Rasudevar**	52	m	+								SP	PA
50	**Ponnammal**	37	f							+	+	SP	PA
51	**Vellai**	62	m									E	AL
52	**Paramu**		m			+	+		+			-	MPA
53	**Chinnan**		m								DC	TP	MEC
54	**kutrallam**		m								DC	TP	MEC

PA- pleomorpic adenoma **MPA**- malignant pleomorpic adenoma

AL- adenolymphoma **MEC**- mucoepidermoid carcinoma

AC- adeno carcinoma **AdCC**- adenoid cystic carcinoma

AnC- anaplastic carcinoma **SP** -Superficial parotidectomy

TP -Total parotidectomy **DC** - Dysplastic changes

CT - Chemotherapy **Fnac –** fine needle aspiration cytology